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Jones, Day, Reavis & Pogue
North Point
901 Lakeside Avenue
Cleveland, OH 44114

EXAMINER	
LE, DEBBIE M	

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte CHENGWEN ROBERT CHU, SUSAN CHRISTINE TIDEMAN, and TONYA KELSEY CHAPMAN

Appeal 2009-002891
Application 09/766,789
Technology Center 2100

Decided: March 31, 2010

Before JOHN A. JEFFERY, LANCE LEONARD BARRY, STEPHEN C. SIU, *Administrative Patent Judges.*

BARRY, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE

The Patent Examiner rejected claims 1-5, 7-38, and 40-63. The Appellants appeal therefrom under 35 U.S.C. § 134(a). We have jurisdiction under 35 U.S.C. § 6(b).

INVENTION

The Appellants describe the invention at issue on appeal as follows.

> [A] computer-implemented dimension engine . . . automatically identifies the market segments represented in user-specified input data. The dimension engine creates new dimension variables. These dimension variables are the variables that most accurately predict the values of a variable that represents the outcome of a business activity. The outcome variable is called a target variable. A data store is used to store the input data. A decision tree processing module determines how to subset (also known as split) the values of the input variables, selects the split variables that best predict the target variable, and recommends these as dimension variables. A multi-dimension viewer generates reports using the recommended and/or user selected dimension variables and statistics based on the target variable.

(Spec. 3-4.)

ILLUSTRATIVE CLAIM

> 34. A computer-implemented multi-dimension data analysis method, comprising the steps of:
>
> storing input data that has dimension variables and at least one target variable;
>
> determining a subset of the dimension variables for splitting the input data, wherein the splitting using the dimension variable subset predicts the target variable; and
>
> wherein the subset of the dimension variables is automatically determined;
>
> generating a report using the determined dimension variables subset and the splitting of the dimension variables.

PRIOR ART

Lawler	5,930,798	Jul. 27, 1999 (filed Aug. 15, 1996)
Chaudhuri	6,212,526 B1	Apr. 3, 2001 (filed Dec. 2, 1997)
Sang'udi	6,480,194 B1	Nov. 12, 2002 (filed Nov. 12, 1996)
Thomas	6,490,719 B1	Dec. 3, 2002 (filed Jan. 22, 2001)
Chickering	6,505,185 B1	Jan. 7, 2003 (filed Mar. 30, 2000)
Anwar	6,750,864 B1	June 15, 2004 (filed Nov. 15, 2000)

Posting of David M. Brown, dmbrown@BROWN-INC.com, to INDEX-L@BINGVMB.CC.BINGHAMTON.EDU (Mar. 12, 1999) ("Brown").

REJECTIONS

Claims 1-5, 7-13, 16, 17, 20-23, 25, 26, 30-38, 40-47, 50, 51, 54, 55, 57, 58, 61, and 62 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sang'udi and Anwar.

Claims 14, 15, 48, and 49 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sang'udi, Anwar, and Chickering.

Claims 18, 19, 27, 28, 52, 53, 59, and 60 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sang'udi, Anwar, and Chaudhuri.

Claims 24 and 56 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sang'udi, Anwar, and Lawler.

Claim 29 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Sang'udi, Anwar, and Brown.

Claim 63 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Anwar, Sang'udi, and Thomas.

CLAIMS 34-38 AND 40-63

Based on the Appellants' arguments, we will decide the appeal of claims 34-38 and 40-63 based on claim 34 alone. *See* 37 C.F.R. § 41.37(c)(1)(vii).

The Examiner finds that "Anwar further discloses if the user does not select a set of dimensions in the database (col. 26, lines 59-60), then the ACTG selects all dimensions, and next, the ACTG will evaluate all valid combinations automatically to determine the best cross-tab construct to present to the user (col. 26, lines 63-65)." (Ans. 24.) Observing that "[c]laim 34 [and claim 63] recite[ ] . . . that a subset of the dimension variables is automatically determined" (App. Br. 9), the Appellants argue that "the cited references (whether viewed alone or in combination) do not teach, disclose or suggest such limitations . . . ." (*Id.*)

Issue

Therefore, the issue before us is whether the Appellants have shown error in the Examiner's finding that Anwar teaches automatically determining a subset of dimension variables.

Law

The question of obviousness is "based on underlying factual determinations including . . . what th[e] prior art teaches explicitly and inherently . . . ." *In re Zurko*, 258 F.3d 1379, 1383 (Fed. Cir. 2001).

Findings of Fact ("FFs")

1. Anwar "provides a computer environment for integrating multidimensional data manipulation, mining and visualization using a set of novel multidimensional data manipulation, mining and graphics techniques." (Col. 2, ll. 10-13.)

2. More specifically, the reference "provides data manipulation and analysis or mining techniques including at least one of the following techniques: a multidimensional decision tree generator; a cross-tab and cross-tab cell ranker (ACTG); a decision tree to cross-tab converter . . . ." (Col. 3, ll. 10-13.)

3. "[A] multidimensional database can contain a large number of dimensions, members and values, the number of cross-tabs in any given cross-tabulated construction can potentially be in the millions, billions, or

even trillions. Thus, the ACTG of this invention provides mechanisms for the user to view the cross-tabs as follows . . . ." (Col. 26, ll. 41-46.) The "ACTG select all dimensions unless the user gives ACTG some instruction on what information is of interest to the user. Next, ACTG will evaluate all valid combinations automatically to determine the best cross-tab construct to present to the user." (*Id.* at ll. 61-65.)

ANALYSIS

Anwar integrates multidimensional data manipulation, data mining, and data visualization. (FF 1.) The reference's data manipulation and data mining techniques include a cross-tab and cross-tab cell ranker, i.e., ACTG. (FF 2.)

Regarding the ACTG, Anwar explains that a multidimensional database can contain a large number of dimensions, members, and values and that the number of cross-tabs in any given cross-tabulated construction can potentially be in the trillions. Accordingly, the reference's ACTG can select all dimensions, without any instruction from the user about what information is of interest, and evaluate all valid combinations automatically to determine the best cross-tab construct to present to the user. We find that such automatic selection of dimensions and determination of the best cross-tab construct from a multidimensional database from the trillions of potential cross-tabs teaches automatically determining a subset of dimension variables.

CONCLUSION

Based on the aforementioned facts and analysis, we conclude that the Appellants have shown no error in the Examiner's finding that Anwar teaches automatically determining a subset of dimension variables.

CLAIMS 1-5 AND 7-33

The Examiner admits that "Sang'udi does not teach the use of decision trees . . . ." (Ans. 4.) She finds, however, that Anwar's "ACTG would be equivalent to appellant's claim language 'a decision tree processing module' . . . ." (*Id.* at 24.) The Appellants argue that the reference "may be discussing an automatic determination, but it is in the context of what is the best cross-tab construct to present to the user, and not to automatically determine through a *decision tree* approach a subset of dimension variables as required in claim 1." (App. Br. 7.)

ISSUE

Therefore, the issue before us is whether the Appellants have shown error in the Examiner's finding that Anwar teaches a decision tree processing module that automatically determines a subset of dimension variables.

ANALYSIS

As explained regarding claims 34-38 and 40-62, *supra*, Anwar automatically determines a subset of dimension variables. We agree with the Appellants, however, that the reference "may be discussing an automatic determination, but it is in the context of what is the best cross-tab construct to present to the user, and not to automatically determine through a *decision*

tree approach a subset of dimension variables as required in claim 1." (App. Br. 7.)

Anwar does teach a multidimensional decision tree generator. (FF 2.) The Examiner has not shown, however, that Anwar's multidimensional decision tree generator automatically determines the subset of dimension variables. To the contrary, it is the ACTG that automatically determines a subset of dimension variables as also explained regarding claims 34-38 and 40-62, *supra*.

We disagree with the Examiner's finding that Anwar's "ACTG would be equivalent to appellant's claim language 'a decision tree processing module' . . . ." (Ans. 24.) For its part, the reference lists its multidimensional decision tree generator and ACTG as separate techniques. (FF 2.) Anwar's further disclosure of a decision tree to cross-tab converter (*id.*), further evidences that the reference's ACTG is not a multidimensional decision tree generator.

The Examiner does not allege, let alone show, that the addition of Thomas, Lawler, Chaudhuri, Chickering, and Brown cures the aforementioned deficiency of Sang'udi and Anwar.

CONCLUSION

Based on the aforementioned facts and analysis, we conclude that the Appellants have shown error in the Examiner's finding that Anwar teaches a

decision tree processing module that automatically determines a subset of dimension variables.

DECISION

We reverse the rejections of claims 1-5 and 7-33 but affirm the rejections of claims 34-38 and 40-63.

No time for taking any action connected with this appeal may be extended under 37 C.F.R. § 1.136(a)(1). *See* 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED-IN-PART

Erc

Ronald J. Clark
P.O. Box 8539
Newport Beach CA 92658